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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROMAN RADON and
RAPHAEL RADON

Appeal 2016-008749
Application 15/018,602
Technology Center 1700

Before JEFFREY T. SMITH, JAMES C. HOUSEL, and JULIA HEANEY,
Administrative Patent Judges.

HEANEY, *Administrative Patent Judge.*

DECISION ON APPEAL¹

Appellants request review pursuant to 35 U.S.C. § 134(a) of a decision of the Examiner to reject claims 1–20 of Application 15/018,602. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

¹ We cite to the Specification filed February 8, 2016 (Spec.), the Rejection delivered May 9, 2016 (Non-Final Act.), the Final Office Action appealed from delivered June 1, 2016 (Final Act.), the Appeal Brief filed June 28, 2016 (App. Br.), the Examiner’s Answer delivered September 19, 2016 (Ans.), and the Reply Brief filed September 26, 2016 (Reply Br.).

BACKGROUND

The subject matter on appeal relates to a hypereutectic high chromium white iron alloy. Spec. ¶ 2. Claim 1, reproduced below, is illustrative:

1. A hypereutectic white iron alloy, wherein the alloy comprises, in weight percent based on a total weight of the alloy:

C	from 3 to 6
N	from 0.04 to 1.2
Cr	from 18 to 48
Mn	from 0 to 8
Ni	from 0 to 5
Co	from 0 to 5
Cu	from 0 to 5
Mo	from 0 to 5
W	from 0 to 6
V	from 0 to 12
Nb	from 0 to 6
Ti	from 0 to 5
(Mg + Ca)	from 0 to 0.2
Si	from 0 to 3
B	from 0.05 to 2
one or more rare earth elements	from 0 to 3

B plus optionally one or more of Ta, Zr, Hf, Al from 0.05 to 3, remainder Fe and unavoidable impurities, provided that a carbonitride volume fraction (CNVF): $(\% C + \% N) \times 12.33 + (\% Cr + \% M) \times 0.55 - 15.2$ equals at least 60, % M representing a total percentage of V, Mo, Nb, and Ti.

App. Br. 19 (Claims Appx.).

THE REJECTIONS

1. Claims 1–20 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Li '966² and Burgess '688.³
2. Claims 1–20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1–25 of US 9,285,631 B2.

DISCUSSION

Obviousness Rejection

Appellants argue the independent claims (1, 10, and 16) as a group, focusing on the common requirement of the presence of boron in the alloy composition. App. Br. 9–15. Appellants separately argue claims 7, 10, and 18–20 based on additional requirements relating to the presence of vanadium in the alloy. App. Br. 15–17. Appellants do not present arguments for separate patentability of the dependent claims, except for claims 7 and 18–20 with respect to the presence of vanadium. We therefore focus our discussion on claims 1 and 10 as representative; dependent claims will stand or fall with the respective claims from which they depend.

Upon consideration of the record in light of each of Appellants' contentions raised in the briefs, we determine that a preponderance of the evidence supports the Examiner's conclusion that the subject matter of Appellants' claims is unpatentable over the applied prior art. We sustain the § 103 rejection for essentially the reasons set out by the Examiner in the Answer. We add the following for emphasis.

² Li, CN 101497966 A, published Aug. 5, 2009 ("Li '966").

³ Burgess, US 2,353,688, issued July 18, 1944 ("Burgess '688").

The Examiner finds that Li '966 teaches a hypereutectic, high Cr-Mn-Mo-W, abrasion resistant steel, for which all major composition ranges overlap the ranges recited in claim 1, except for boron. Non-Final Act. 2–4, citing Li '966 Abstract, ¶¶ 9–10. The Examiner further finds that Li '966 discloses an example that meets the CNVF equation recited in claim 1. *Id.* at 3, citing Li '966 ¶¶ 38, 42. The Examiner further finds that Burgess '688 teaches adding 0.5–3wt% vanadium and 0.1–5wt% boron to an abrasion-resistant high chromium iron alloy to improve physical properties (Non-Final Act. 3–4, citing Burgess '688 p. 2, left col., ll. 6–38), and thus determines it would have been obvious to a person of ordinary skill to add vanadium and boron in the amounts taught by Burgess '688 to the composition of Li '966, in order to improve the alloy's physical properties. Non-Final Act. 4.

Appellants argue that the Examiner has not established obviousness for several reasons, among them the following: (1) Li '966 discloses boron as an optional element, in an amount outside the claimed range (App. Br. 9–10); (2) a person of ordinary skill would not have a reason to look beyond Li '966 for an alloy composition including boron within the claimed range, because Li '966 already discloses boron (*id.* at 11); (3) a person of ordinary skill in the art would not have had a reasonable expectation of success in applying Burgess '688's teachings to Li '966's alloy compositions because of differences in the carbon and chromium contents of their respective alloy compositions (*id.* at 11–12); and (4) a person of ordinary skill in the art would not have been motivated to include the amounts of boron and nitrogen taught by Burgess '688 because Burgess '688 discloses broad concentration ranges, is vague as to which properties of the alloy would be improved by addition of boron, and does not recommend addition of boron (*id.* at 12–14).

Appellants' arguments are not persuasive of reversible error. The overlap between the ranges in the composition of Li '966 as modified by Burgess '688 establishes obviousness. *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003) (“In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness.”) As the Examiner finds and Appellants do not dispute, Burgess '688 teaches physical properties of abrasion-resistant high chromium iron alloys are improved by adding boron and vanadium. The Examiner reasonably determines that it would have been obvious to a person of ordinary skill to form an alloy such as described by Li '966 comprising boron and vanadium in the amounts taught by Burgess '688 to obtain an alloy having improved physical properties. Appellants have not directed us to any evidence to rebut the obviousness rejection, such as unexpected results, but instead rely solely on attorney argument. *See In re Geisler*, 116 F.3d 1465, 1470–71 (Fed. Cir. 1997) (mere attorney statement that a result is surprising does not constitute the factual evidence required to rebut a *prima facie* case of obviousness). With respect to Li '966's disclosure of boron as an optional element, Appellants' argument is unpersuasive because it attacks the reference individually. *In re Keller*, 208 USPQ 871, 882 (CCPA 1981). Further, Appellants' Specification itself describes that boron is optional in the alloy. *E.g.*, Spec. ¶ 12. Finally, Appellants' argument that Burgess '688 is “vague” and further does not “particularly recommend[s] B (and V) as addition to the alloys” (App. Br. 13–14) is not persuasive because nothing in Burgess '688 discourages the use of boron or vanadium. The cited prior art establishes a person of ordinary

skill in the art would have recognized the effect of adding boron and vanadium to an alloy composition.

With respect to claim 10 and the dependent claims that recite at least 2wt% vanadium (claims 7 and 10), or vanadium at a concentration which is at least 1.1 times the total concentration of carbon and nitrogen (claims 18–20), Appellants’ arguments concerning the concentration of vanadium in the applied references are similar to the arguments directed at claim 1, as discussed above. *See* App. Br. 15–17. Appellants rely solely on attorney argument and do not offer evidence of unexpected results. Those arguments are not sufficient to rebut the Examiner’s obviousness determination. As stated above, the cited prior art establishes a person of ordinary skill in the art would have recognized the effect of adding boron and vanadium to an alloy composition.

Nonstatutory Obviousness-Type Double Patenting Rejection

Appellants do not argue this rejection. App. Br. 18. Accordingly, we summarily affirm the rejection of claims 1–20 on the ground of nonstatutory obviousness-type double patenting based on claims 1–25 of Appellants’ prior patent, US 9,285,631 B2. *See Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (“If an appellant fails to present arguments on a particular issue—or more broadly, on a particular rejection—the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection.”).

ORDER

We AFFIRM the Examiner’s rejections of claims 1–20.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED